in theory, with no substantial problem, but what would he do in practice? "Famines have apparently always existed in India, but they grew much more serious with the unfortunate intervention of the English in the Indian economy during the nineteenth century." If that be so (and if one be permitted to use arguments of comparable reality) then there would be no further useful purpose in India's British-engineered railroads and irrigation works, whose area exceeds the total of irrigated areas of the next ten most irrigated countries in the world.

Egypt's problems, too, might present difficulties for there "English intervention in the economy of Egypt" upset a precarious balance, so that "today, with the Nile harnessed by western technique, the *fellah* has been freed from his periodic famines, but is in exchange condemned to a régime of chronic hunger." The rest of Africa might present problems no more than verbal, for de Castro writes that "the difficulty is not so much the direct action of the climate, asphyxiating and annihilating human beings, as the hasty generalizations of certain followers of climatic theories of civilization would have it."

It is remarkable that de Castro, who clearly is learned and not deterred by formidable problems of compilation, should be so convinced that an alteration of a single factor can afford a sufficient solution to the complex problem of the obvious maladjustments between changing human numbers, changing total food supplies, changing standards of desirability and much else besides.

The eugenic interest of this book is distant.

G. C. L. BERTRAM.

GENETICS

Kemp, T. *Genetics and Disease.* Edinburgh, 1952. Oliver & Boyd. Pp. 330. Price 60s.

TAGE KEMP is Professor of Human Genetics in Copenhagen University and director of the Copenhagen Institute of Human Genetics. His book is a straightforward elementary account of the application of modern genetical theory to medicine and embodies the outlook and teaching of the research school which he has established in Copenhagen during the last twenty years. The work is presumably intended as a general textbook of the subject for medical students and also as a guide to general practitioners and clinicians in the various specialities who may at one time or another be confronted with problems involving a knowledge of medical genetics.

After a brief historical introduction, the first two sections of the book present a general and perhaps over-simplified account of current genetical theory and the methods used in the study of problems in human genetics. This is lucidly and economically written and should be readily followed by the ordinary reader without any specialized knowledge. The treatment throughout is non-mathematical and the statistical side of the subject is only briefly touched upon. More attention might well have been given to modern work on the physiological and biochemical aspects of genetics. It would also have been worth while indicating in rather more detail how far the various theories have a factual or experimental basis. The statement, for example, that "polygenes" are "small determinants with simple products, small proteins and ribose nucleic acid" suggests that we know rather more about the intimate nature of continuous variation than is in fact the case.

The third section is taken up with an account of hereditary variations among normal individuals. It is somewhat uneven but does contain a useful and up-to-date account of the genetics of the blood group antigens.

Approximately one-third of the book is given over to a more or less systematic survey of the genetics of different diseases and congenital abnormalities. This involves summarizing an enormous literature in a relatively short space and consequently individual conditions can only be treated comparatively briefly. It is a pity therefore that the author has not included a bibliography containing key references to the

original papers cited on the inheritance of the many disorders. This would have made the book more useful to clinicians seeking detailed information about particular conditions in addition to a general account of the underlying theory. An extra five or ten pages of bibliography would not increase the overall length of the book unduly, and it is to be hoped that this will be included in later editions.

At times the terminology becomes a little loose. In the account of mental diseases, for example, after remarking very correctly that " in spite of the great work done within the study of psychiatric genetics we still do not know the exact inheritance of a single one of the most common mental diseases," it is later stated that " the gene for schizophrenia or dementia præcox or juvenile insanity is present in 0·7 per cent to 0·9 per cent of the population." It is only confusing to medical readers, who are on the whole unaccustomed to the differences implied by the ideas of gene frequency, case frequency and frequency of predisposed individuals in a population, to use the phrase " gene for schizophrenia " in this context.

Much of the material presented in this section is based on the results of the many impressive surveys carried out in Professor Kemp's institute during the last decade. It should perhaps be pointed out that occasionally these findings run counter to results obtained elsewhere. Thus the suggestion that the tendency to the development of breast cancer is bound up with an inherited predisposition to endogamous cancer in general has not been borne out in at least two different investigations published during the last few years in this country.

The final section of the book is devoted to the problem of " genetic hygiene." That is to say, the use of what knowledge we have of genetical prognosis in preventing the birth of malformed children or those liable to suffer from hereditary diseases. Denmark is one of the countries in which it is legal to perform operations for sterilization or the induction of abortion for purely genetical considerations. It is therefore of some interest to have Professor Kemp's views on the subject because he has been actively concerned with these questions for many years. His approach is cautious, empirical and humane. He regards " genetic hygiene " as a purely medical matter whose aim is the prevention of disease and unnecessary suffering to both parents and children. He insists on " the principle of voluntariness," that is to say, such operations should be performed exclusively at the desire of the persons concerned, and then only after very careful consideration has been given to the prognostic indications. He remarks " it is obvious that measures which interfere so radically with the fate and most intimate life of the human individual may arouse some friction or conflict of views " and he emphasizes that the principle followed should always be that " too few genetic hygiene operations are preferable to too many."

H. H.

Sorsby, A. *Genetics in Ophthalmology.* London, 1951. Butterworth. Pp. xi + 251. Price 42s.

It is a commonplace that as environmental conditions improve and preventive and curative medicine advance, so the relative contribution of heredity to disease increases in the diminishing numbers of those affected. In other words, as the more easily controlled environmental influences are checked, so we are increasingly aware of the remaining hard core of hereditary and congenital abnormality and of excessive constitutional susceptibility. In no other field is this so strikingly illustrated as in ophthalmology. Infection as a cause of blindness has been largely eliminated, and so, as Professor Sorsby points out, over so short a period as a quarter of a century, from 1923 to 1948, the proportion of blind children aged 5-15 in England and Wales fell from 37 per 100,000 to 21. But whereas in 1923 one-third of the blindness was attributed to congenital and hereditary defects (including myopia), in 1948 the proportion was two-thirds. There was no reduction here; the hard core has been nearly reached.

No other specialism provides a richer field